

Appl. No. 10/776,771

April 27, 2006

Reply to Office Action of: March 1, 2006

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (previously presented) A rotary hydraulic machine comprising a housing, a rotating group within said housing including a barrel and a plurality of pistons slidable within cylinders formed in said barrel, a swashplate operable upon said pistons to induce reciprocation thereof in respective ones of said cylinders to transfer fluid between an inlet port and an outlet port as said barrel rotates about a longitudinal axis, and an actuator operable upon said swashplate to rotate it about an axis of rotation and adjust the disposition thereof relative to said housing and thereby vary the stroke of said pistons in said cylinders, said swashplate having a bearing surface engagable with a complementary surface on said housing and a fluid bearing interposed between said surfaces, said bearing being supplied with fluid through a pressure compensated flow control valve to maintain a predetermined flow of fluid as pressure at said ports varies.
2. (original) A rotary hydraulic machine according to claim 1 wherein said fluid bearing is supplied with fluid from one of said ports.
3. (cancel)
4. (previously presented) A rotary hydraulic machine according to claim 1 wherein said fluid bearing includes a pair of recesses formed between said surfaces and fluid is supplied to each of said recesses.
5. (original) A rotary hydraulic machine according to claim 4 wherein said recesses are generally aligned with said ports.
6. (original) A rotary hydraulic machine according to claim 5 wherein said recesses are of differing areas to balance forces imposed on said swashplate by connection of said pistons to respective ones of said ports.
7. (original) A rotary hydraulic machine according to claim 1 wherein at least one of said surfaces has a coating applied thereto to reduce friction between said surfaces.
8. (original) A rotary hydraulic machine according to claim 7 wherein said coating is applied to said bearing surface.

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9. (original) A rotary hydraulic machine according to claim 7 wherein said coating is a polymer.
10. (original) A rotary hydraulic machine according to claim 9 wherein said polymer is a nylon.
11. (original) A rotary hydraulic machine according to claim 10 wherein said nylon is formulated from a type II polyamide resin.
12. (original) A rotary hydraulic machine according to claim 1 wherein said bearing surface is part cylindrical.
13. (original) A rotary hydraulic machine according to claim 12 wherein said bearing surface is coated with a polymer to reduce friction between said surfaces.
14. (original) A rotary hydraulic machine according to claim 12 wherein fluid is supplied to said fluid bearing from one of said ports.
15. (previously presented) A rotary hydraulic machine according to claim 12 wherein said bearing surface is convex.
16. (previously presented) A rotary hydraulic machine according to claim 15 wherein said swashplate has a planar surface oppositely directed to said bearing surface and said pistons bear against said planar surface.
17. (previously presented) A rotary hydraulic machine according to claim 16 wherein each of said pistons includes a slipper secured to a piston body by a universal joint, said slipper engaging said planar surface to slide relative thereto as said barrel rotates.
18. (original) A rotary hydraulic machine according to claim 17 wherein said planar surface is provided by an annular insert located within a body of said swashplate.
19. (original) A rotary hydraulic machine according to claim 18 wherein said slippers are maintained in contact with said planar surface by a retaining plate having apertures therein to accommodate said pistons and clamps secure said retaining plate to said swashplate body.
20. (original) A rotary hydraulic machine according to claim 1 wherein said actuator includes a pair of motors acting at spaced locations on said swashplate.

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21. (previously presented) A rotary hydraulic machine according to claim 20 wherein said motors engage said swashplate on opposite sides of a plane passing through its axis of rotation and said longitudinal axis of said barrel.
22. (previously presented) A hydraulic machine according to claim 20 wherein said swashplate includes a body having a part cylindrical bearing face and an oppositely directed planar face engaged by said pistons with said part cylindrical bearing face defining an axis of rotation of said swashplate, said motors engaging said planar face on opposite sides of a plane containing said axis of rotation and said longitudinal axis of said barrel to impart rotation in opposite directions to said swashplate.
23. (previously presented) A hydraulic machine according to claim 22 wherein each of said motors comprises a linear motor having a working piston extendible from a cylinder upon application of fluid pressure to said motor.
24. (previously presented) A hydraulic machine according to claim 23 wherein each of said working pistons engages a convex abutment protruding from said planar face a positioned relative to said axis of rotation to provide a rolling engagement of said working piston over said abutment as said swashplate rotates.
25. (cancel)
26. (cancel)
27. (cancel)
28. (cancel)
29. (cancel)
30. (cancel)
31. (cancel)
32. (cancel)
33. (cancel)
34. (cancel)
35. (cancel)
36. (cancel)
37. (cancel)
38. (cancel)

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39. (cancel)
40. (cancel)
41. (cancel)
42. (cancel)
43. (currently amended) A rotary hydraulic machine comprising a housing, a rotating group within said housing including a barrel and a plurality of pistons slidable within cylinders formed in said barrel, a swashplate operable upon said pistons to induce reciprocation thereof in respective ones of said cylinders to transfer fluid between an inlet port and an outlet port as said barrel rotates about a longitudinal axis, a bearing assembly to support said swashplate in said housing for rotation relative to said housing about an axis of rotation and an actuator operable upon said swashplate to adjust the disposition thereof relative to said housing and thereby vary the stroke of said pistons in said cylinders, said swashplate including a body having a planar face engaged by said pistons and a pair of convex abutments protruding from said planar face on opposite sides of a plane containing said axis of rotation and said longitudinal axis, and said actuator including a pair of motors each having an end face and engaging a respective one of said convex abutments on said planar face on opposite sides of said axis of rotation to impart rotation in opposite directions to said swashplate, said convex abutments being positioned on said planar face relative to said axis of rotation [[and]] such that said end-faces convex abutments [[to]] roll across said end face of said motors as said swashplate is adjusted and thereby inhibit relative sliding there between.
44. (original) A hydraulic machine according to claim 43 wherein said motors each include a working piston engagable with a respective one of said abutments.
45. (original) A hydraulic machine according to claim 44 wherein said abutments are provided by cylindrical pins received in part cylindrical bores in said swashplate.
46. (previously presented) A hydraulic machine according to claim 45 wherein said bearing assembly includes a part cylindrical convex bearing surface on said swashplate oppositely directed to said planar surface and a complementary surface in said housing to define said axis of rotation.

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47. (original) A hydraulic machine according to claim 46 wherein a fluid bearing is interposed between said surfaces.
48. (original) A rotary hydraulic machine according to claim 46 wherein at least one of said surfaces has a coating applied thereto to reduce friction between said surfaces.
49. (original) A rotary hydraulic machine according to claim 48 wherein said coating is applied to said bearing surface.
50. (original) A rotary hydraulic machine according to claim 49 wherein said coating is a polymer.
51. (original) A rotary hydraulic machine according to claim 50 wherein said polymer is a nylon.
52. (original) A rotary hydraulic machine according to claim 51 wherein said nylon is formulated from a type II polyamide resin.
53. (original) A hydraulic machine according to claim 44 wherein said working pistons are slidably received in an actuator cylinder secured to said casing.
54. (original) A hydraulic machine according to claim 53 wherein said actuator cylinder is located in a bore in said housing.